1. **Label as linear or quadratic.**

x	y
0	2
1	1
2	0
3	−1
4	−2

_____

x	y
0	0
1	−1
2	2
3	9
4	20

_____

2. A tennis ball is hit into the air from 3 feet above ground with a vertical velocity of 65 feet per second. The function that describes the height of the ball in terms of time is $g(t) = -16t^2 + 65t + 3$. **Use the graph or the equation to answer the questions.**

   a. Does it have an absolute max or min?

   b. What are the zeros?

   c. What is the y-intercept?

   d. What is the domain of the graph?

   e. What is the domain of this problem?
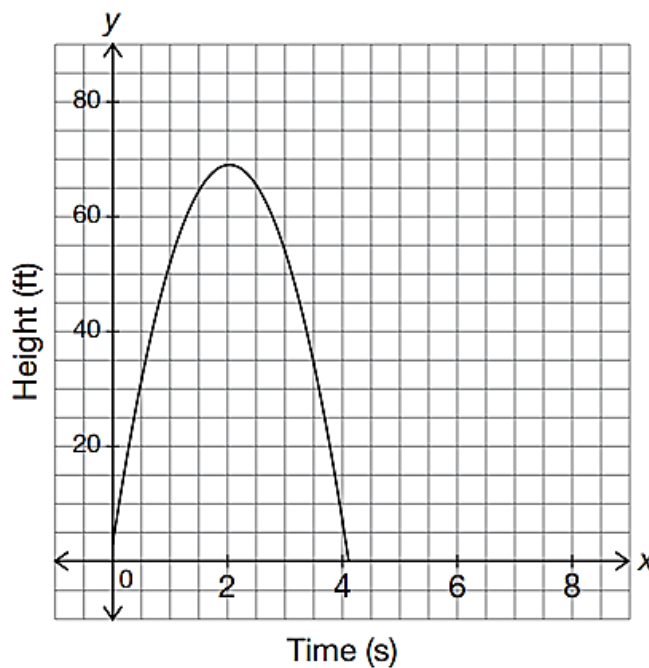
   f. What is the range of the graph?

   g. What is the range of this problem?

   h. What is the vertex?

Height (ft) vs Time (s)

   i. What is the axis of symmetry?

   j. At what time(s) does ball reach a height of 60 feet?

   k. Name two different pairs of symmetric points.

3. **Write each form of a quadratic function in the space provided. Then tell what characteristics of the graph you can find with each form.**

Standard	Factored	Vertex

Based on the form of each function, give all the characteristics of the graph.

4. $f(x) = 2(x-2)(x+4)$

5. $f(x) = x^2 - 2x - 3$

6. $f(x) = -3(x-4)^2 + 6$

7. $f(x) = -(x+3)(x-8)$

8. $f(x) = -x^2 + 5x + 6$

9. $f(x) = \frac{1}{2}(x+2)^2 - 5$

Write an equation for each of the following using the characteristics. (You have to choose which "form" of the equation to use based on the details you have).

10. Vertex (4, 8); Parabola opens up
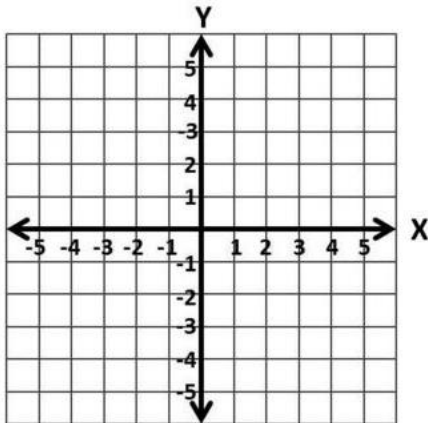
11. Zeros are (4, 0) and (-2, 0); Parabola opens down

12. Zeros are (-6, 0) and (3, 0); Parabola opens up

13. Vertex (-3, 5); Parabola opens down

Graph each function. Plot and label the vertex. Then draw and label the axis of symmetry.
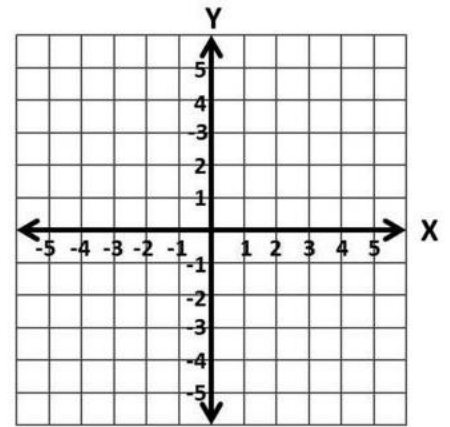
14. $f(x) = x^2 + 2$

x	$f(x)$
-2	
-1	
0	
1	
2	

15. $f(x) = x^2 + 2x - 3$

x	$f(x)$
-3	
-2	
-1	
0	
1	

Determine the axis of symmetry of each parabola.

16. The x-intercepts of a parabola are (4, 0) and (8, 0).

17. Two symmetric points on a parabola are (4, 4) and (-10, 4).

Determine the vertex of each parabola. (If the axis of symmetry isn't given, use the points given to determine the axis of symmetry.)

18.
$f(x) = -2x^2 + 4x$
$axis\ of\ symmetry : x = 1$

19.
$f(x) = x^2 - 8x + 12$
$x - intercepts : (6,0)\ and\ (2,0)$

Describe the transformation performed on each function f(x) to result in g(x).

a. g(x) = (x + 3)² – 2

b. g(x) = (x – 2)²

c. g(x) = -(x – 6)² - 1

d. g(x) = ½x² + 3

e. g(x) = -x² – 10

f. g(x) = -2(x + 5)²

g. g(x) = ¼ (x – 4)² – 8

h. g(x) = 3(x – 1)² + 4